



Capital Budgeting for Efficiency, Profitability, and Sustainability

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Table of Contents

- 1) Introduction – Capital and excess profits
- 2) Strategic capital rationing – a framework for risk and reward
- 3) Assessment of capital project decision tools in use today
- 4) Case Study – analysis of two competing projects
 - 1) New Feed Product
 - 2) Additional Ethanol capacity

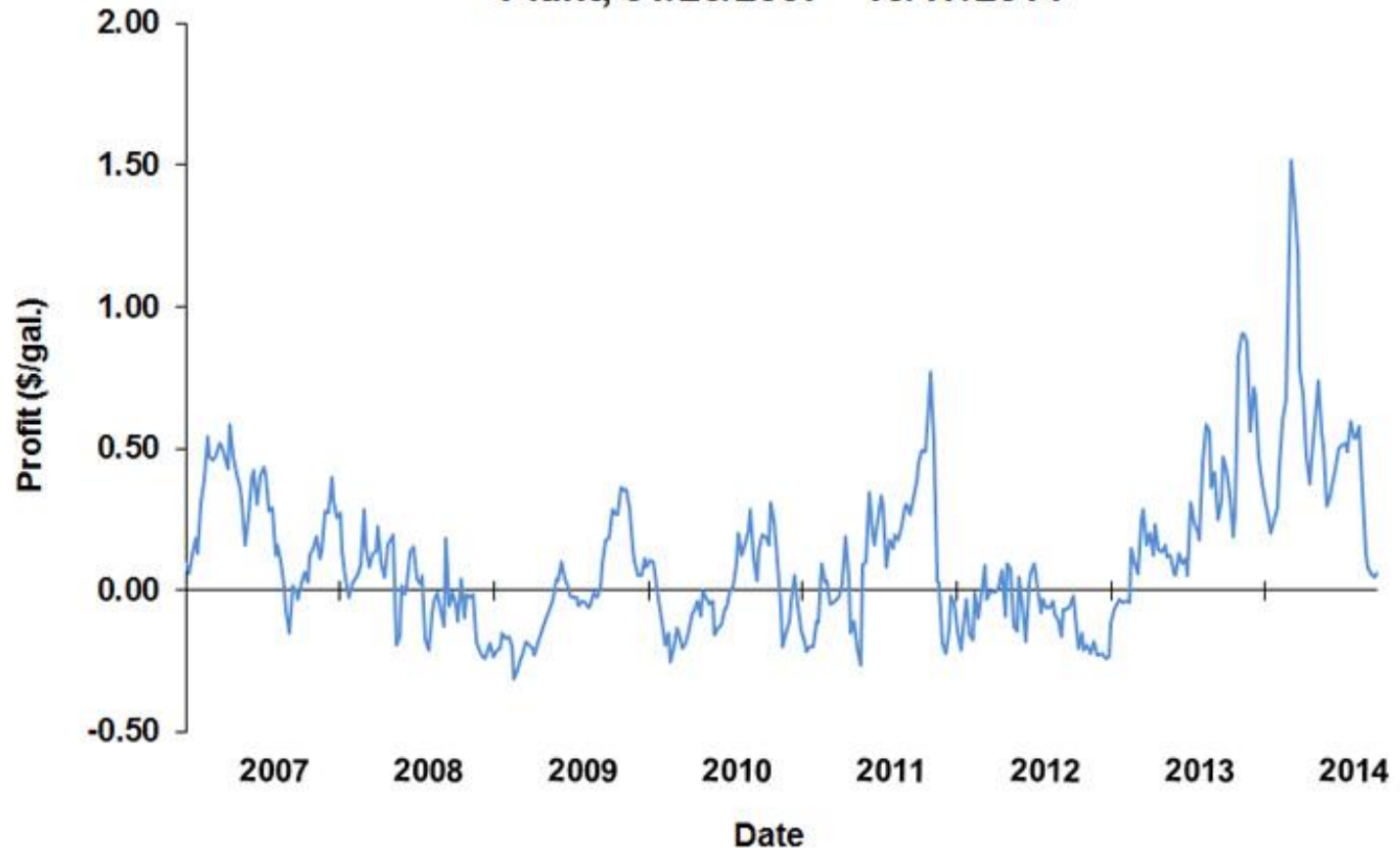
Economics – “excess profits”

- **excess profit**
- **definition**
- Profit of a firm over and above what provides its owners with a normal (market equilibrium) return to capital
- Source – Investorguide.com
- To the economist, much of what is classified in business usage as profit consists of shareholder returns on equity

Historic Ethanol Net Profits

4

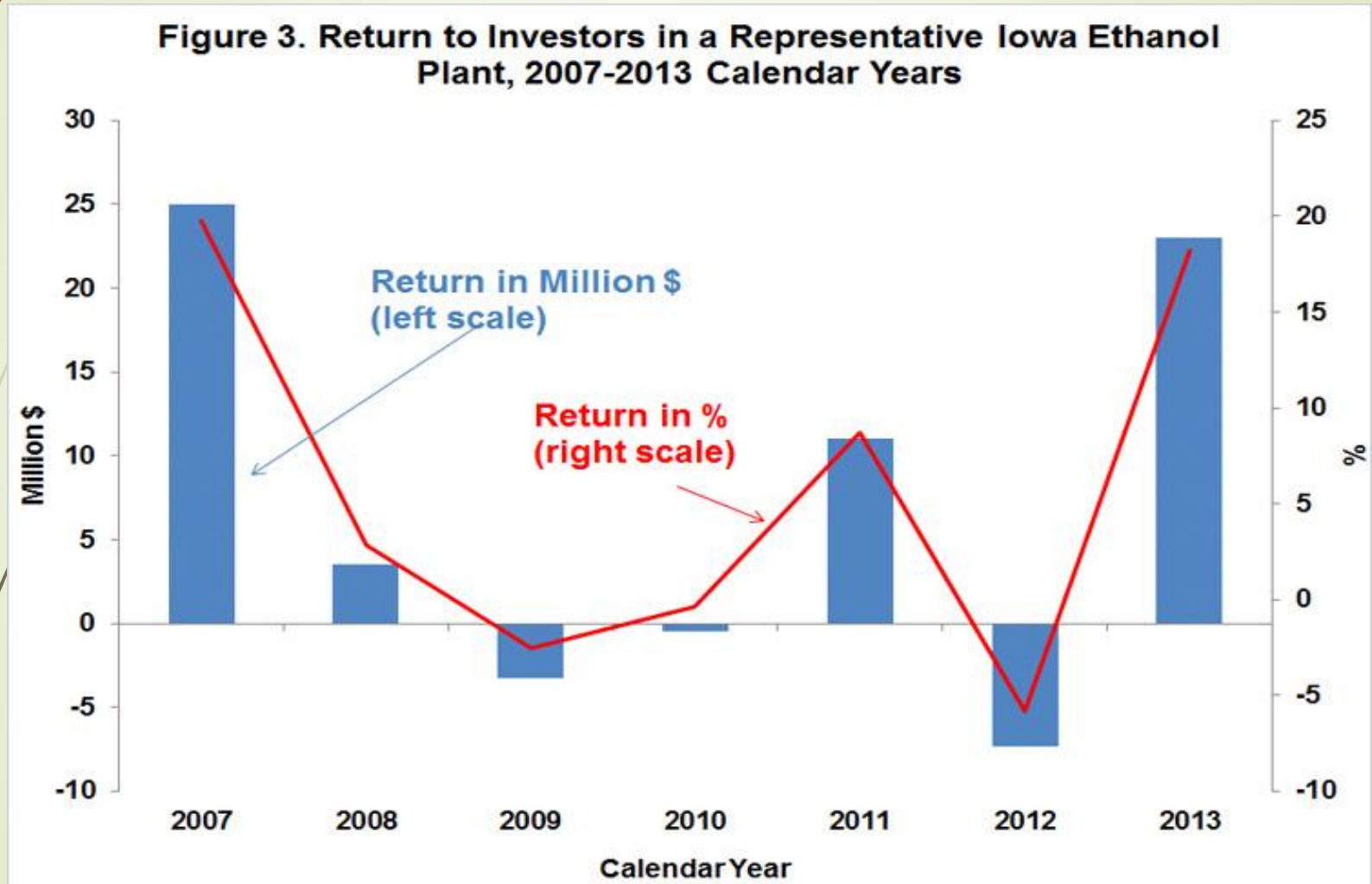
Figure 1. Weekly (Friday) Ethanol Production Profit Net of all Variable and Fixed Costs at a Representative Iowa Ethanol Plant, 01/26/2007 - 10/17/2014



Source – Farmdoc Daily – Scott Irwin, Department of Agriculture and Consumer Economics, University of Illinois

Historic Return on Equity

5



Source – Farmdoc Daily – Scott Irwin, Department of Agriculture and Consumer Economics, University of Illinois

Efficient Capital Deployment

- Efficient capital deployment can
 - Maintain and defend the existing profits that a firm has
 - Grow opportunities to create excess profits
- We will explore
 - Creating a capital framework to deploy cash efficiently to drive profits
 - Evaluate a few capital project decision tools in use today to assess projects
 - Discuss a case study to explore a few competing projects

Strategic Capital Rationing

- Senior management is responsible for the deployment of excess cash to drive shareholder value
- There is always competition for cash for different objectives from different stakeholders
 - Maintenance capital - Reinvest in existing assets
 - Debt Service
 - Distributions to shareholders
 - Dividend distribution
 - Stock repurchase plans
 - Strategic capital investment

Long Term Capital Strategy

- Develop a long term – 5-10 year cash forecast
- Develop a plan to utilize that cash to satisfy demands of various stakeholders
- There is risk and reward to all options – showing the potential for growth in earnings creates the incentive at the shareholder level to assume certain levels of risk
- **This should also include the ability and willingness to secure additional financing for strategic initiatives and projects**
- This does not have to be a complex model

Example 5 year model – 100 MGY Operation

	Forecasted Performance			Bust year			
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Totals
Base EBITDA	\$ 25.0	\$ 26.3	\$ 27.6	\$ (6.1)	\$ 30.4	\$ 31.9	
Growth EBITDA			\$ 3.0	\$ 7.7	\$ 7.9	\$ 13.7	\$ 32.3
Cash Interest	\$ (1.6)	\$ (1.0)	\$ 0.8	\$ (0.6)	\$ (0.3)	\$ (0.2)	
Cash Earnings	\$ 23.4	\$ 25.3	\$ 31.3	\$ 1.0	\$ 38.0	\$ 45.4	
Depreciation	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)	
Net Income	\$ 8.9	\$ 10.8	\$ 16.8	\$ (13.5)	\$ 23.5	\$ 30.9	
Earnings per Share	\$ 0.05	\$ 0.06	\$ 0.09	\$ (0.07)	\$ 0.13	\$ 0.17	
Cash Earnings	\$ 23.4	\$ 25.3	\$ 31.3	\$ 1.0	\$ 38.0	\$ 45.4	\$ 164.4
Sch Principal Payments	\$ (6.7)	\$ (6.7)	\$ (6.7)	\$ (6.7)	\$ (6.7)	\$ (5.5)	\$ (39.0)
Capital Expenditures	\$ (2.3)	\$ (1.5)	\$ (1.5)	\$ (1.5)	\$ (1.5)	\$ (1.5)	\$ (9.8)
Cash Flow	\$ 14.4	\$ 17.1	\$ 23.1	\$ (7.2)	\$ 29.8	\$ 38.4	\$ 115.6
Working Capital	\$ 32.7	\$ 46.9	\$ 57.5	\$ 35.6	\$ 58.1	\$ 71.1	
Working Capital Target	\$ 32.0	\$ 32.0	\$ 32.0	\$ 32.0	\$ 32.0	\$ 32.0	
Available Funds to Invest	\$ 0.6	\$ 14.9	\$ 25.5	\$ 3.6	\$ 26.1	\$ 39.1	
Dividend rate	\$ 0.02	\$ 0.02	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.04	\$ 0.17
Dividend	\$ (2.8)	\$ (3.7)	\$ (4.7)	\$ (5.6)	\$ (6.5)	\$ (7.4)	
Strategic Investment		\$ 11.2	\$ 20.9	\$ -	\$ 19.6	\$ 31.6	\$ 83.3

Forecast Balance Sheet

Balance Sheet	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Capital	\$ 29.9	\$ 36.2	\$ 39.0	\$ 41.9	\$ 44.7	\$ 44.6
Long Term Assets	\$ 66.5	\$ 75.0	\$ 94.5	\$ 84.8	\$ 111.8	\$ 148.3
	\$ 96.4	\$ 111.2	\$ 133.5	\$ 126.7	\$ 156.5	\$ 192.9
External Debt	\$ 64.1	\$ 57.4	\$ 50.7	\$ 44.0	\$ 37.4	\$ -
Shareholder Equity	\$ 32.3	\$ 53.8	\$ 82.8	\$ 82.7	\$ 119.1	\$ 192.9
	\$ 96.4	\$ 111.2	\$ 133.5	\$ 126.7	\$ 156.5	\$ 192.9
Depreciation	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)	\$ (14.5)
Net Income	\$ 33.2	\$ 35.2	\$ 41.1	\$ 13.9	\$ 52.3	\$ 62.2
Return on Equity	29%	19%	16%	0%	16%	12%
				5 year average ROE		15.4%
Shareholder equity	\$ 32.3	\$ 53.8	\$ 82.8	\$ 82.7	\$ 119.1	\$ 192.9
Shares O/S	186	186	186	186	186	186
Book value/Share	\$ 0.17	\$ 0.29	\$ 0.45	\$ 0.44	\$ 0.64	\$ 1.04
Earning per Share	\$ 0.05	\$ 0.06	\$ 0.07	\$ (0.00)	\$ 0.10	\$ 0.13

Capital Decision Tools in use today

- ▶ Payback Period
- ▶ Internal Rate of Return
- ▶ Net Present Value
- ▶ Given today's technology it is easy to use all of these tools

Payback Period

➤ Pros

- 1. Easy to understand
- 2. Biased towards liquidity
- 3. Accept if less than some pre-set limit (i.e. 3 years)

➤ Cons

- 1. Ignores the time value of money
- 2. Uses an arbitrary cutoff point
- 3. Ignores cash flows beyond the pre-set limit
- 4. Biased against long-term projects

Internal Rate of Return

Pros

- 1. Intuitively appealing – managers like to hear returns
- 2. Simple way to communicate project value to someone who does not know all the estimation details
- Accept project if it is greater than a required return

Cons

- 1. Might assume unrealistic reinvestment at IRR
- 2. Might not be good for comparing two mutually exclusive investments

Net Present Value

Pros

- 1. Gives importance to the time value of money
- 2. Profitability and risk of the projects are given high priority
- 3. Helps maximize firm's value

Cons

- 1. More difficult to use
- 2. Can't give accurate decision if investment amount of mutually exclusive projects is not equal
- 3. May not give correct decision when the projects are of unequal life
- 4. It is difficult to calculate the appropriate discount rate

Case Study Illustration

- This study will attempt to use the various capital budgeting tools to analyze two competing projects at an existing 100MGY ethanol plant in NE
- Project 1 – Plant expansion of 25% of ethanol capacity
 - Initial Investment – \$30,750,000
 - Produce an additional 30MM gallons of Ethanol and related DDG and Corn oil
 - Project assumed to have a twenty year life
- Project 2 - Hypothetical project that allows for the production of a high protein feed by modifying the current ethanol conversion platform
 - Initial Investment – \$30,000,000
 - Produces 65,553 tons of high protein feed in addition to Ethanol, DDG, and Corn Oil products
 - Initial project assumed to have a ten year life

Project One – Returns and Risk Assessment

- Returns on a plant expansion can be more easily quantified since it is a known product and process
- Process/Operational risk – do exist but should be mitigated since we already know how to run an ethanol plant
- Market Risks – do exist
 - Ability to market increased quantities of commodity product into existing markets. Can those markets absorb the additional capacity without reducing prices?
 - Ability to source increased levels of inputs – is there sufficient corn supply that will prevent corn costs from increasing as demand is increased?
- When assessing competing projects the cost of capital can be used to assign different risk values to projects and include these risks in the financial evaluation of the competing projects

Project Two – Returns and Risk Assessment

- Significant returns created from an additional value stream from a new product
- Process/Operational Risks – may be significant as the project hinges on a new equipment and process
- Market Risks – also significant since the project includes producing a new product sold into a new and developing marketplace
- Cost of Capital for this project may be quite a bit higher to assign a value to the assumption of these increased risks

Creating Capital Models

- Assumptions are key – any model – however fancy - is as accurate as the assumptions used to create it
- When models are presented be sure to scrutinize the assumptions
- May be prudent to run various scenarios of different assumptions
- When creating models with new products be sure to “check” your model with a **Mass Balance calculation** to ensure product outputs do not exceed available inputs – i.e. – only so much protein is in a corn kernel and only so much protein can be produced from the conversion process

Project One – Decision Tools and Estimated Project Returns

Adding Additional 25% of Ethanol Capacity

	Existing	Incremental
Ethanol Production	123,000,000	30,750,000
Corn Bushels	43,702,143	10,925,536
Variable Margin	\$ 0.38	\$ 0.38
Increased VM	\$ 16,606,814	\$ 4,151,704

Cost of Capital

6%

Initial outlay	\$	(30,750,000)
Year 1	\$	2,075,852
Year 2	\$	4,151,704
Year 3	\$	4,151,704
Year 4	\$	4,151,704
Year 5	\$	4,151,704
Year 6	\$	4,151,704
Year 7	\$	4,151,704
Year 8	\$	4,151,704
Year 9	\$	4,151,704
Year 10	\$	4,151,704
Year 11	\$	4,151,704
Year 12	\$	4,151,704
Year 13	\$	4,151,704
Year 14	\$	4,151,704
Year 15	\$	4,151,704
Year 16	\$	4,151,704
Year 17	\$	4,151,704
Year 18	\$	4,151,704
Year 19	\$	4,151,704
Year 20	\$	4,151,704

Capital Decision Tools

Payback Period	7.9 years
Internal Rate of Return	11%
Net Present Value 6% Cost of Capital	\$14,067,323

Project Two – Decision Tools and Estimated Project Returns

Cost of Capital
Required Return

6%
18%

Initial outlay	\$	(30,000,000)
Year 1	\$	6,842,077
Year 2	\$	13,684,154
Year 3	\$	13,684,154
Year 4	\$	13,684,154
Year 5	\$	13,684,154
Year 6	\$	13,684,154
Year 7	\$	13,684,154
Year 8	\$	13,684,154
Year 9	\$	13,684,154
Year 10	\$	13,684,154

Capital Decision Tools	
Payback Period	2.7 years
Internal Rate of Return	38%
Net Present Value	
6% Cost of Capital	\$60,624,315
18% Required Return	\$21,779,151

Comparison Results

	Project One	Project Two
Required Return	6%	18%
Payback Period	7.9	2.7
Internal Rate of Return	11%	38%
Excess Profits	5%	20%
Net Present Value	\$ 14,067,323	\$ 21,779,151

- With proper modeling set-up various scenarios and what-ifs can be included to run various simulations

In summary

- Efficient capital deployment can create and drive value and excess profits
- Important to have an overall framework to measure and assess potential returns – **BENEFITS** – that can be analyzed along with the **RISKS** that are inherent
- Many capital decision tools are available and with technology today are easy to use
- Understand the benefits and “blind spots” of the various tools

Questions or Comments

Thank You !

